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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY
The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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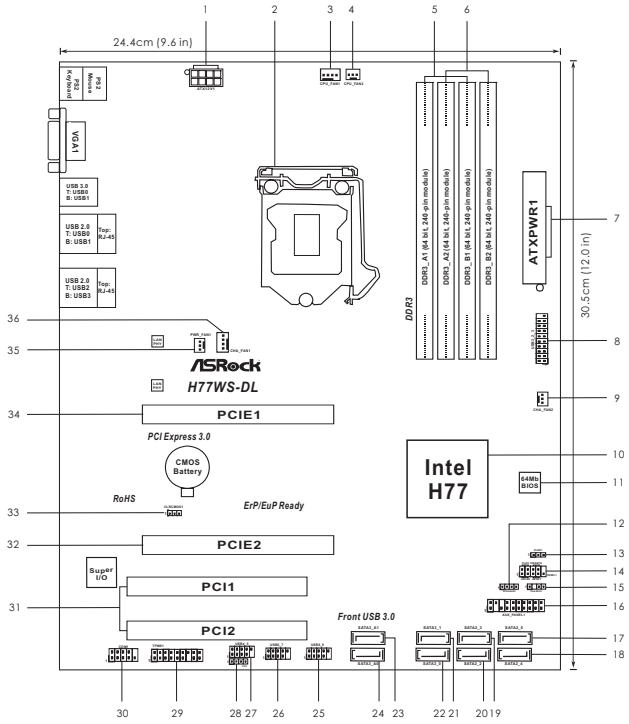
English

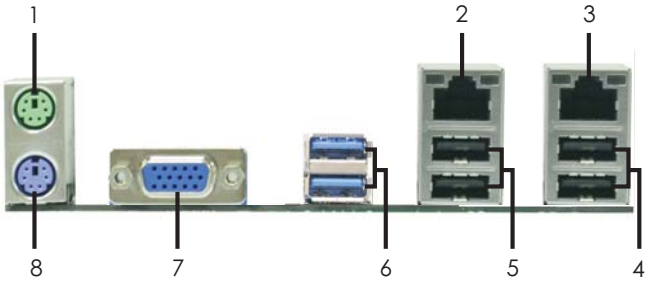
Motherboard Layout



1	ATX 12V Power Connector (ATX12V1)	18	SATA2 Connector (SATA2_4, Blue)
2	1155-Pin CPU Socket	19	SATA2 Connector (SATA2_3, Blue)
3	CPU Fan Connector (CPU_FAN1)	20	SATA2 Connector (SATA2_2, Blue)
4	CPU Fan Connector (CPU_FAN2)	21	SATA3 Connector (SATA3_1, White)
5	2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1, Blue)	22	SATA3 Connector (SATA3_0, White)
		23	SATA3 Connector (SATA3_A1, White)
6	2 x 240-pin DDR3 DIMM Slots (DDR3_A2, DDR3_B2, White)	24	SATA3 Connector (SATA3_A0, White)
		25	USB 2.0 Header (USB8_9, Blue)
7	ATX Power Connector (ATXPWR1)	26	USB 2.0 Header (USB6_7, Blue)
8	USB 3.0 Header (USB3_2_3, Light Blue)	27	USB 2.0 Header (USB4_5, Blue)
9	Chassis Fan Connector (CHA_FAN2)	28	Consumer Infrared Module Header (CIR1, White)
10	Intel H77 Chipset		
11	SPI Flash Memory (64Mb)	29	TPM Header (TPMS1)
12	Chassis Speaker Header (SPEAKER1, White)	30	COM Port Header (COM1)
13	Power LED Header (PLED1)	31	PCI Slots (PCI1-2, White)
14	System Panel Header (PANEL1, White)	32	PCI Express 2.0 x16 Slot (PCIE2, Blue)
15	Chassis Intrusion Header (CHASSIS1, White)	33	Clear CMOS Jumper (CLRCMOS1)
16	Auxiliary Panel Header (AUX_PANEL1, Black)	34	PCI Express 3.0 x16 Slot (PCIE1, Blue)
		35	Power Fan Connector (PWR_FAN1)
17	SATA2 Connector (SATA2_5, Blue)	36	Chassis Fan Connector (CHA_FAN1)

English

I/O Panel



1	PS/2 Mouse Port (Green)	5	USB 2.0 Ports (USB01)
* 2	LAN RJ-45 Port	6	USB 3.0 Ports (USB3_01)
* 3	LAN RJ-45 Port	7	VGA Port (VGA1)
4	USB 2.0 Ports (USB23)	8	PS/2 Keyboard Port (Purple)

* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

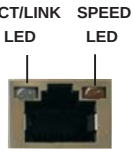
LAN Port LED Indications

Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1Gbps connection



LAN Port

English

1. Introduction

Thank you for purchasing ASRock ***H77WS-DL*** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

This Quick Installation Guide contains introduction of the motherboard and step-by-step installation guide. More detailed information of the motherboard can be found in the user manual presented in the Support CD.

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website http://www.asrock.com
If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.
www.asrock.com/support/index.asp

1.1 Package Contents

ASRock ***H77WS-DL*** Motherboard
(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)
ASRock ***H77WS-DL*** Quick Installation Guide
ASRock ***H77WS-DL*** Support CD
2 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield

ASRock Reminds You...
To get better performance in Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit, it is recommended to set the BIOS option in Storage Configuration to AHCI mode. For the BIOS setup, please refer to the "User Manual" in our support CD for details.

English

1.2 Specifications

Platform	- ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm - All Solid Capacitor design
CPU	- Supports 3rd and 2nd Generation Intel® Core™ i7 / i5 / i3 and Pentium® / Celeron® Processors in LGA1155 Package - 4 + 2 Power Phase Design - Supports Intel® Turbo Boost 2.0 Technology - Supports Intel® K-Series unlocked CPU - Supports Hyper-Threading Technology (see **CAUTION 1**)
Chipset	- Intel® H77 - Supports Intel® Rapid Start Technology and Smart Connect Technology
Memory	- Dual Channel DDR3 Memory Technology (see **CAUTION 2**) - 4 x DDR3 DIMM slots - Supports DDR3 1600/1333/1066 non-ECC, un-buffered memory (DDR3 1600 with Intel® Ivy Bridge CPU, DDR3 1333 with Intel® Sandy Bridge CPU) - Max. capacity of system memory: 32GB (see **CAUTION 3**) - Supports Intel® Extreme Memory Profile (XMP)1.3/1.2
Expansion Slot	- 1 x PCI Express 3.0 x16 slot (PCIE1: x16 mode) (see **CAUTION 4**) * PCIE 3.0 is only supported with Intel® Ivy Bridge CPU. With Intel® Sandy Bridge CPU, it only supports PCIE 2.0. - 1 x PCI Express 2.0 x16 slot (PCIE2: x4 mode) - 2 x PCI slots - Supports AMD Quad CrossFireX™ and CrossFireX™
Graphics	* Intel® HD Graphics Built-in Visuals and the VGA outputs can be supported only with processors which are GPU integrated. - Supports Intel® HD Graphics Built-in Visuals: Intel® Quick Sync Video 2.0, Intel® InTru™ 3D, Intel® Clear Video HD Technology, Intel® Insider™, Intel® HD Graphics 2500/4000 - Pixel Shader 5.0, DirectX 11 with Intel® Ivy Bridge CPU. Pixel Shader 4.1, DirectX 10.1 with Intel® Sandy Bridge CPU. - Max. shared memory 1760MB (see **CAUTION 5**) - Supports D-Sub with max. resolution up to 2048x1536 @ 75Hz

English

LAN	- PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - Supports Wake-On-LAN - Supports LAN Cable Detection - Supports Energy Efficient Ethernet 802.3az - Supports Dual LAN with Teaming function - Supports PXE
Rear Panel I/O	I/O Panel - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x VGA Port - 4 x Ready-to-Use USB 2.0 Ports - 2 x Ready-to-Use USB 3.0 Ports - 2 x RJ-45 LAN Ports with LED (ACT/LINK LED and SPEED LED)
SATA3	- 2 x SATA3 6.0 Gb/s connectors by Intel® H77, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology), NCQ, AHCI and Hot Plug functions - 2 x SATA3 6.0 Gb/s connectors by ASMedia ASM1061, support NCQ, AHCI and “Hot Plug” functions
USB3.0	- 2 x Rear USB 3.0 ports, support USB 1.0/2.0/3.0 up to 5Gb/s - 1 x Front USB 3.0 header (supports 2 USB 3.0 ports), supports USB 1.0/2.0/3.0 up to 5Gb/s
Connector	- 4 x SATA2 3.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage and Intel Smart Response Technology), NCQ, AHCI and Hot Plug functions - 4 x SATA3 6.0Gb/s connectors - 1 x CIR header - 1 x COM port header - 1 x Power LED header - 1 x Chassis Intrusion header - 1 x Auxiliary panel header - 1 x TPM header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports) - 1 x USB 3.0 header (supports 2 USB 3.0 ports)

BIOS Feature	- 64Mb AMI UEFI Legal BIOS with GUI support - Supports “Plug and Play” - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support - CPU Core, IGPU, DRAM, 1.8V PLL, VTT, VCCSA Voltage Multi-adjustment
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version)
Unique Feature	- ASRock Extreme Tuning Utility (AXTU) (see **CAUTION 6**) - ASRock Instant Boot - ASRock Instant Flash (see **CAUTION 7**) - ASRock APP Charger (see **CAUTION 8**) - ASRock SmartView (see **CAUTION 9**) - ASRock XFast USB (see **CAUTION 10**) - ASRock XFast LAN (see **CAUTION 11**) - ASRock XFast RAM (see **CAUTION 12**) - ASRock Crashless BIOS (see **CAUTION 13**) - Hybrid Booster: - ASRock U-COP (see **CAUTION 14**) - Boot Failure Guard (B.F.G.) - Combo Cooler Option (C.C.O.) (see **CAUTION 15**) - Good Night LED
Hardware Monitor	- CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU/Chassis Quiet Fan (Allows Chassis Fan Speed Auto-Adjust by CPU Temperature) - CPU/Chassis Fan Multi-Speed Control - Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore
OS	- Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit compliant (see **CAUTION 16**)
Certifications	- FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see **CAUTION 17**)

* For detailed product information, please visit our website: http://www.asrock.com

English

WARNING

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

CAUTION!

1. About the settings of "Hyper Threading Technology", please check page 53 of the "User Manual" in the support CD.
2. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 15 for proper installation.
3. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 7 / Vista™ / XP. For Windows® OS with 64-bit CPU, there is no such limitation. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.
4. Only PCIE1 slot supports Gen 3 speed. To run the PCI Express in Gen 3 speed, please install an Ivy Bridge CPU. If you install a Sandy Bridge CPU, the PCI Express will run only at PCI Express Gen 2 speed.
5. The maximum shared memory size is defined by the chipset vendor and is subject to change. Please check Intel® website for the latest information.
6. ASRock Extreme Tuning Utility (AXTU) is an all-in-one tool to ne-tune different system functions in a user-friendly interface, which includes Hardware Monitor, Fan Control, Overclocking, OC DNA and IES. In Hardware Monitor, it shows the major readings of your system. In Fan Control, it shows the fan speed and temperature for you to adjust. In Overclocking, you are allowed to overclock CPU frequency for optimal system performance. In OC DNA, you can save your OC settings as a profile and share it with your friends. Your friends then can load the OC profile to their own system to get the same OC settings. In IES (Intelligent Energy Saver), the voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle without sacrificing computing performance. Please visit our website for the operation procedures of ASRock Extreme Tuning Utility (AXTU).
   ASRock website: http://www.asrock.com
7. ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Instant Flash.

English

Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

8. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPad/iPod Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply install the APP Charger driver, it makes your iPhone charge much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience.
   ASRock website: http://www.asrock.com/Feature/AppCharger/index.asp
9. ASRock SmartView, a new function for internet browsers, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience. ASRock motherboards are exclusively equipped with the ASRock SmartView utility that helps you keep in touch with friends on-the-go. To use ASRock SmartView feature, please make sure your OS version is Windows® 7 / 7 64 bit / Vista™ / Vista™ 64 bit, and your browser version is IE8.
   ASRock website: http://www.asrock.com/Feature/SmartView/index.asp
10. ASRock XFast USB can boost USB storage device performance. The performance may depend on the properties of the device.
11. ASRock XFast LAN provides a faster internet access, which includes the benefits listed below. LAN Application Prioritization: You can configure your application's priority ideally and/or add new programs. Lower Latency in Game: After setting online game's priority higher, it can lower the latency in games. Traffic Shaping: You can watch Youtube HD videos and download simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are transferring currently.
12. ASRock XFast RAM is a new function that is included into ASRock Extreme Tuning Utility (AXTU). It fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

13. ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS update process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB2.0 ports support this feature.
14. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
15. Combo Cooler Option (C.C.O.) provides the flexible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. Please be noticed that not all the 775 and 1156 CPU Fan can be used.
16. ASRock XFast RAM is not supported by Microsoft® Windows® XP / XP 64-bit. Intel® Smart Connect Technology and Intel® USB 3.0 ports are not supported by Microsoft® Windows® Vista™ / Vista™ 64-bit / XP / XP 64-bit.
17. EuP stands for Energy Using Product, was a provision regulated by the European Union to define the power consumption for the completed system. According to EuP, the total AC power of the completed system should be under 1.00W in off mode condition. To meet EuP standards, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v, and the standby power efficiency should be higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you to check with the power supply manufacturer for more details.

2. Installation

This is an ATX form factor (12.0" x 9.6", 30.5 x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the mother-board to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

English

2.3 CPU Installation

For the installation of Intel 1155-Pin CPU, please follow the steps below.

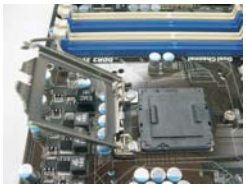
1155-Pin Socket Overview

Before you insert the 1155-Pin CPU into the socket, please check if the CPU surface is unclean or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

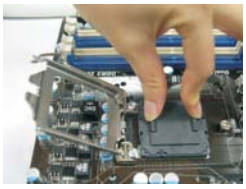
Step 1. Open the socket:

Step 1-1. Disengage the lever by pressing it down and sliding it out of the hook.

Step 1-2. Keep the lever positioned at about 135 degrees in order to flip up the load plate.



Step 2. Remove the PnP Cap (Pick and Place Cap).



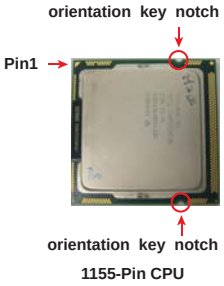
1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

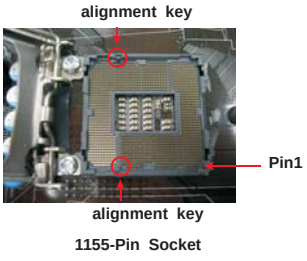
English

Step 3. Insert the 1155-Pin CPU:

Step 3-1. Hold the CPU by the edge which is marked with a black line.

Step 3-2. Orient the CPU with the IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.





For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 3-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 3-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 4. Close the socket:

Step 4-1. Flip the load plate onto the IHS.

Step 4-2. Press down the load lever, and secure it with the load plate tab under the retention tab.

English

2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPUs. Please adopt the type of heatsink and cooling fan compliant with Intel 1155-Pin CPU to dissipate heat. Before you install the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_FAN1, see page 2, No. 3 or CPU_FAN2, see page 2. No.4).

For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

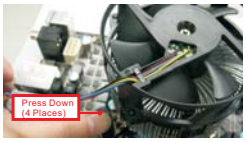
Below is an example to illustrate the installation of the heatsink for 1155-Pin CPUs.

Step 1. Apply thermal interface material onto the center of the IHS on the socket's surface.

Step 2. Place the heatsink onto the socket. Ensure that the fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 2, No. 3 or or CPU_FAN2, see page 2. No.4).

Step 3. Align fasteners with the motherboard throughholes.

Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.



If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure redundant cable with tie-wrap to ensure the cable does not interfere with fan operation or contact other components.

Please be noticed that this motherboard supports Combo Cooler Option (C.C.O.), which provides flexible options to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. The white throughholes are for Socket LGA 1155/1156 CPU fan.

English

2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR3 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel A** (DDR3_A1 and DDR3_B1; Blue slots; see p.2 No.5) or **identical** DDR3 DIMM pair in **Dual Channel B** (DDR3_A2 and DDR3_B2; White slots; see p.2 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install **identical** DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

Dual Channel Memory Configuration

	DDR3_A1 (Blue Slot)	DDR3_A2 (White Slot)	DDR3_B1 (Blue Slot)	DDR3_B2 (White Slot)
(1)	Populated	-	Populated	-
(2)	-	Populated	-	Populated
(3)*	Populated	Populated	Populated	Populated

* For configuration (3), please install **identical** DDR3 DIMMs in all four slots.

1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of blue slots (DDR3_A1 and DDR3_B1), or in the set of white slots (DDR3_A2 and DDR3_B2).
2. If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR3_A1 and DDR3_A2, it is unable to activate Dual Channel Memory Technology.
4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
5. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.

English

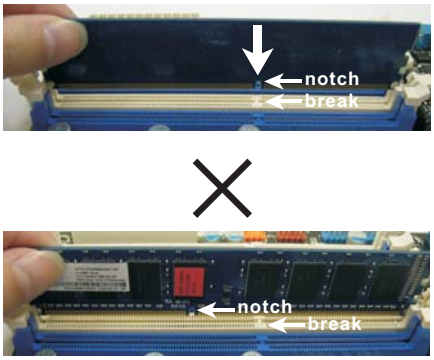
6. For optimal compatibility and stability while overclocking memory frequency, it is recommended to install one memory module in DDR3_B2 slot or two memory modules in DDR3_A2 and DDR3_B2 slots.

Installing a DIMM

Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

Step 1. Unlock a DIMM slot by pressing the retaining clips outward.

Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

English

2.6 Expansion Slots (PCI and PCI Express Slots)

There are 2 PCI slots and 2 PCI Express slots on this motherboard.

PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface.

PCIE slots: PCIE1 (PCIE 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards, or to install PCI Express graphics cards to support CrossFireX™ function.
PCIE2 (PCIE 2.0 x16 slot) is used for PCI Express x4 lane width graphics cards, or to install PCI Express graphics cards to support CrossFireX™ function.

1. In single VGA card mode, it is recommended to install a PCI Express x16 graphics card on PCIE1 slot.
2. In CrossFireX™ mode, please install the PCI Express x16 graphics cards on PCIE1 and PCIE2 slots. Therefore, PCIE1 will work at x16 bandwidth, while PCIE2 works at x4 bandwidth.
3. Please connect a chassis fan to the motherboard's chassis fan connector (CHA_FAN1 or CHA_FAN2) when using multiple graphics cards for better thermal environment.
4. Only PCIE1 slot supports Gen 3 speed. To run the PCI Express in Gen 3 speed, please install an Ivy Bridge CPU. If you install a Sandy Bridge CPU, the PCI Express will run only at PCI Express Gen 2 speed.

Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.7 CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™ and Quad CrossFireX™. CrossFireX™ technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFireX™ enables the highest possible level of performance and image quality in any 3D application. Currently CrossFireX™ is supported by Windows® XP with Service Pack 2 / Vista™ / 7 OS. Quad CrossFireX™ is supported by Windows® Vista™ / 7 OS only. Please check AMD's website for AMD CrossFireX™ driver updates.

1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFireX™. All three CrossFireX™ components, a CrossFireX™ Ready graphics card, a CrossFireX™ Ready motherboard and a CrossFireX™ Edition co-processor graphics card, must be installed correctly to benefit from the CrossFireX™ multi-GPU platform.
2. If you pair a 12-pipe CrossFireX™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireX™ mode.

2.7.1 Installing Two CrossFireX™-Ready Graphics Cards

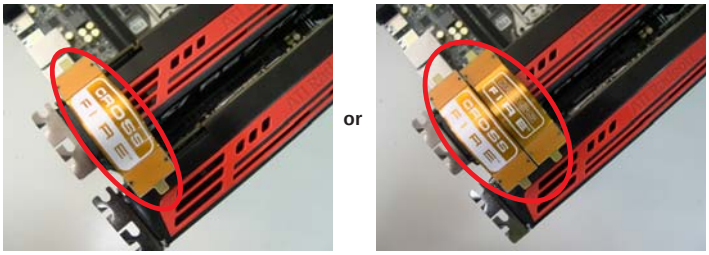
Different CrossFireX™ cards may require different methods to enable CrossFireX™ feature. For other CrossFireX™ cards that AMD has released or will release in the future, please refer to AMD graphics card manuals for detailed installation guide.

Step 1. Insert one Radeon graphics card into PCIE1 slot and the other Radeon graphics card to PCIE2 slot. Make sure that the cards are properly seated on the slots.

English

Step 2. Connect two Radeon graphics cards by installing a CrossFire Bridge on the CrossFire Bridge Interconnects on the top of the Radeon graphics cards. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)

CrossFire Bridge



or

Step 3. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE1 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)

English

2.7.2 Driver Installation and Setup

Step 1. Power on your computer and boot into OS.

Step 2. Remove the AMD drivers if you have any VGA drivers installed in your system.

The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD's website for AMD driver updates.

Step 3. Install the required drivers to your system.

For Windows® XP OS:

A. AMD recommends Windows® XP Service Pack 2 or higher to be installed (If you have Windows® XP Service Pack 2 or higher installed in your system, there is no need to download it again): http://www.microsoft.com/windowsxp/sp2/default.mspx

B. You must have Microsoft .NET Framework installed prior to downloading and installing the CATALYST Control Center. Please check Microsoft's website for details.

For Windows® 7 / Vista™ OS:

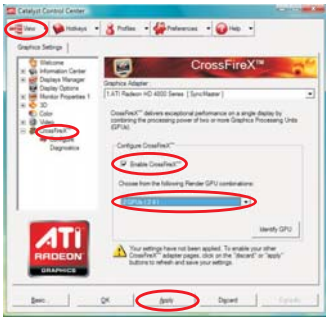
Install the CATALYST Control Center. Please check AMD's website for details.

Step 4. Restart your computer.

Step 5. Install the VGA card drivers to your system, and restart your computer. You will find "AMD Catalyst Control Center" on your Windows® taskbar.

AMD Catalyst Control Center

Step 6. Double-click "ATI Catalyst Control Center". Click "View", select "CrossFireX™", and then check the item "Enable CrossFireX™". Select "2 GPUs" and click "Apply".



English

Although you have selected the option "Enable CrossFire™", the CrossFireX™ function may not work actually. Your computer will automatically reboot. After restarting your computer, please confirm whether the option "Enable CrossFire™" in "ATI Catalyst Control Center" is selected or not; if not, please select it again, and then you are able to enjoy the benefits of CrossFireX™.

Step 7. You can freely enjoy the benefits of CrossFireX™ or Quad CrossFireX™.

* CrossFireX™ appearing here is a registered trademark of AMD Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe.
* For further information of AMD CrossFireX™ technology, please check AMD's website for updates and details.

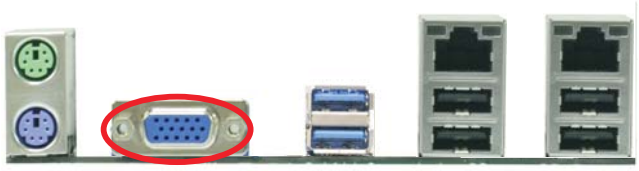
English

2.8 Surround Display Feature

This motherboard supports surround display upgrade. With the internal VGA output support and external add-on PCI Express VGA cards, you can easily enjoy the benefits of surround display feature.

Please refer to the following steps to set up a surround display environment:

1. Install the PCI Express VGA cards on PCIE1 slot. Please refer to page 17 for proper expansion card installation procedures.
2. Connect a VGA monitor cable to the VGA port on the I/O panel. Then connect other monitor cables to the corresponding connectors of the add-on PCI Express VGA cards on PCIE1 slot.



VGA port

3. Boot your system. Press <F2> or <Del> to enter UEFI setup. Enter “Share Memory” option to adjust the memory capability to [32MB], [64MB], [128MB], [256MB] or [512MB] to enable the function of VGA. Please make sure that the value you select is less than the total capability of the system memory. If you do not adjust the UEFI setup, the default value of “Share Memory”, [Auto], will disable VGA function when an add-on VGA card is inserted to this motherboard.
4. Install the onboard VGA driver and the add-on PCI Express VGA card driver to your system. If you have installed the drivers already, there is no need to install them again.
5. Set up a multi-monitor display.

English

For Windows® XP / XP 64-bit OS:

Right click on desktop, choose “Properties”, and select the “Settings” tab so that you can adjust the parameters of the multi-monitors according to the steps below.

A. Click the “Identify” button to display a large number on each monitor.

B. Right-click the display icon in the Display Properties dialog that you wish to be your primary monitor, and then select “Primary”. When you use multiple monitors with your card, one monitor will always be Primary, and all additional monitors will be designated as Secondary.

C. Select the display icon identified by the number 2.

D. Click “Extend my Windows desktop onto this monitor”.

E. Right-click the display icon and select “Attached”, if necessary.

F. Set the appropriate “Screen Resolution” and “Color Quality” for the second monitor. Click “Apply” or “OK” to apply these new values.

G. Repeat steps C through E for the display icon identified by the numbers three to five.

For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:

Right click the desktop, choose “Personalize”, and select the “Display Settings” tab so that you can adjust the parameters of the multi-monitors according to the steps below.

A. Click the number ”2” icon.

B. Click the items “This is my main monitor” and “Extend the desktop onto this monitor”.

C. Click “OK” to save your change.

D. Repeat steps A through C for the display icons identified by the number three to five.

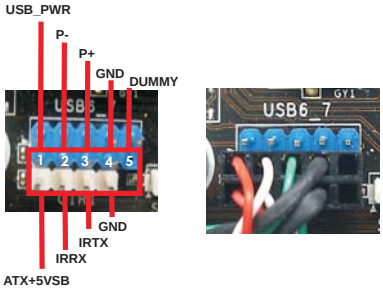
6. Use Surround Display. Click and drag the display icons to positions representing the physical setup of your monitors that you would like to use. The placement of display icons determines how you move items from one monitor to another.

2.9 ASRock Smart Remote Installation Guide

ASRock Smart Remote is only used for ASRock motherboard with CIR header. Please refer to below procedures for the quick installation and usage of ASRock Smart Remote.

Step1. Find the CIR header located next to the USB 2.0 header on ASRock motherboard.

Step2. Connect the front USB cable to the USB 2.0 header (as below, pin 1-5) and the CIR header. Please make sure the wire assignments and the pin assignments are matched correctly.



Step3. Install Multi-Angle CIR Receiver to the front USB port.

Step4. Boot up your system. Press <F2> or <Del> to enter BIOS Setup Utility. Make sure the option "CIR Controller" is setting at [Enabled]. (Advanced -> Super IO Configuration -> CIR Controller -> [Enabled])

If you cannot find this option, please shut down your system and install Multi-Angle CIR Receiver to the other front USB port then try again.

Step5. Enter Windows. Execute ASRock support CD and install CIR Driver. (It is listed at the bottom of driver list.)

English

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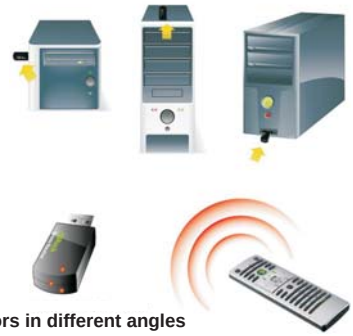


3 CIR sensors in different angles

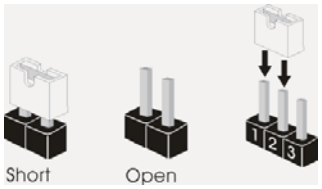
1. Only one of the front USB port can support CIR function. When the CIR function is enabled, the other port will remain USB function.
2. Multi-Angle CIR Receiver is used for front USB only. Please do not use the rear USB bracket to connect it on the rear panel. Multi-Angle CIR Receiver can receive the multi-direction infrared signals (top, down and front), which is compatible with most of the chassis on the market.
3. The Multi-Angle CIR Receiver does not support Hot-Plug function. Please install it before you boot the system.

* ASRock Smart Remote is only supported by some of ASRock motherboards. Please refer to ASRock website for the motherboard support list: http://www.asrock.com

English

2.10 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



Jumper	Setting	Description
Clear CMOS Jumper (CLRCMOS1) (see p.2, No. 33)	1_2 Default 2_3 Clear CMOS	

Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

English

2.11 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

Serial ATA2 Connectors
(SATA2_2: see p.2, No. 20)
(SATA2_3: see p.2, No. 19)
(SATA2_4: see p.2, No. 18)
(SATA2_5: see p.2, No. 17)

These four Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

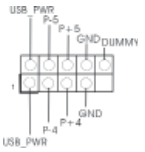
Serial ATA3 Connectors
(SATA3_0: see p.2, No. 22)
(SATA3_1: see p.2, No. 21)
(SATA3_A0: see p.2, No. 24)
(SATA3_A1: see p.2, No. 23)

These four Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

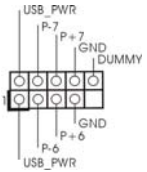
Serial ATA (SATA) Data Cable
(Optional)

Either end of the SATA data cable can be connected to the SATA / SATA2 / SATA3 hard disk or the SATA2 / SATA3 connector on this motherboard.

USB 2.0 Headers
(9-pin USB4_5)
(see p.2, No. 27)



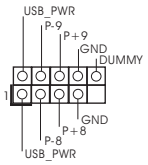
(9-pin USB6_7)
(see p.2, No. 26)



Besides four default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

English

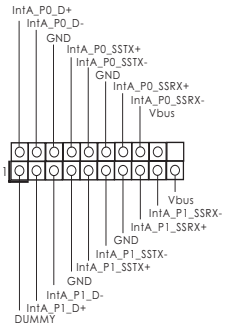
(9-pin USB8_9)
(see p.2, No. 25)



USB 3.0 Header

(19-pin USB3_2_3)

(see p.2, No. 8)

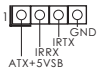


Besides two default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

Consumer Infrared Module Header

(4-pin CIR1)

(see p.2 No. 28)

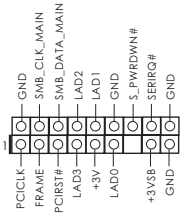


This header can be used to connect the remote controller receiver.

TPM Header

(17-pin TPMS1)

(see p.2 No. 29)

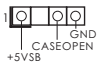


This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Chassis Intrusion Header

(3-pin CHASSIS1)

(see p.2 No. 15)



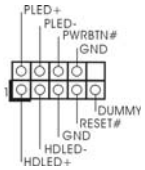
This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

English

System Panel Header

(9-pin PANEL1)

(see p.2, No. 14)



This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

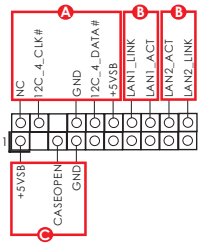
PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

Auxiliary Panel Header

(18-pin AUX_PANEL1)

(see p.2, No. 16)



This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

A. Front panel SMBus connecting pin (6-1 pin FPSMB)
This header allows you to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral

English

equipment in the system, which has slower transmission rates, and power management equipment.

B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)

These two 2-pin headers allow you to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

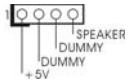
C. Chassis intrusion pin (4-1 pin CHASSIS)

This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.2, No. 12)



Please connect the chassis speaker to this header.

Power LED Header

(3-pin PLED1)

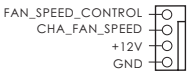
(see p.2, No. 13)

Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1/S3 state. The LED is off in S4 state or S5 state (power off).

Chassis and Power Fan Connectors

(4-pin CHA_FAN1)

(see p.2, No. 36)



(3-pin CHA_FAN2)

(see p.2, No. 9)

(3-pin PWR_FAN1)

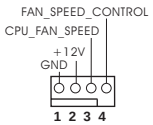
(see p.2, No. 35)

Please connect the fan cables to the fan connectors and match the black wire to the ground pin.

CPU Fan Connectors

(4-pin CPU_FAN1)

(see p.2, No. 3)



Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

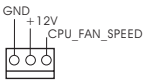
English

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

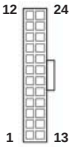
Pin 1-3 Connected

3-Pin Fan Installation

(3-pin CPU_FAN2)
(see p.2, No. 4)



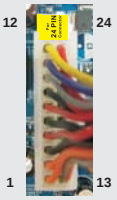
ATX Power Connector
(24-pin ATXPWR1)
(see p.2, No. 7)



Please connect an ATX power supply to this connector.

Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.

20-Pin ATX Power Supply Installation



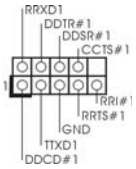
ATX 12V Power Connector
(8-pin ATX12V1)
(see p.2, No. 1)

Please connect an ATX 12V power supply to this connector.

Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

4-Pin ATX 12V Power Supply Installation

Serial port Header
(9-pin COM1)
(see p.2, No. 30)



This COM1 header supports a serial port module.

English

2.12 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

2.13 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA / SATA2 / SATA3 HDDs with RAID functions, please refer to the document at the following path in the Support CD for detailed procedures:

..\ RAID Installation Guide

2.14 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the steps below according to the OS you install.

2.14.1 Installing Windows® XP / XP 64-bit Without RAID Functions

If you want to install Windows® XP / XP 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the steps below.

AHCI mode is not supported under Windows® XP / XP 64-bit.

Using SATA / SATA2 / SATA3 HDDs without NCQ function

STEP 1: Set Up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the option “SATA Mode Selection” to [IDE]. (For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.)
Set the option “ASMedia SATA3 Mode” to [IDE]. (For SATA3_A0 and SATA3_A1 ports.)

STEP 2: Install Windows® XP / XP 64-bit OS on your system.

2.14.2 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow the steps below.

Using SATA / SATA2 / SATA3 HDDs without NCQ function

STEP 1: Set Up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the option "SATA Mode Selection" to [IDE]. (For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.)
Set the option "ASMedia SATA3 Mode" to [IDE]. (For SATA3_A0 and SATA3_A1 ports.)

STEP 2: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

Using SATA / SATA2 / SATA3 HDDs with NCQ function

STEP 1: Set Up UEFI.

A. Enter UEFI SETUP UTILITY → Advanced screen → Storage Configuration.

B. Set the option "SATA Mode Selection" to [AHCI]. (For SATA2_2 to SATA2_5, SATA3_0 and SATA3_1 ports.)
Set the option "ASMedia SATA3 Mode" to [AHCI]. (For SATA3_A0 and SATA3_A1 ports.)

STEP 2: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.

English

2.15 Teaming Function Operation Guide

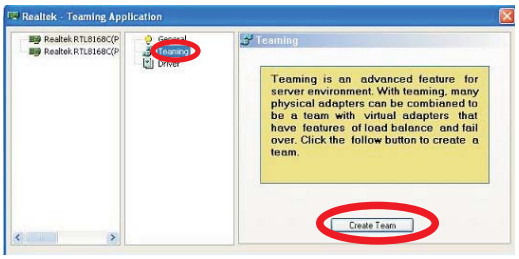
Dual LAN with Teaming function enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

Before setting up Teaming function, please make sure if your Switch (or Router) could support Teaming (IEEE 802.3ad Link Aggregation) function. (For example: D-Link DGS-3100.) Then, please refer to following steps to set up Teaming function according to the OS you install.

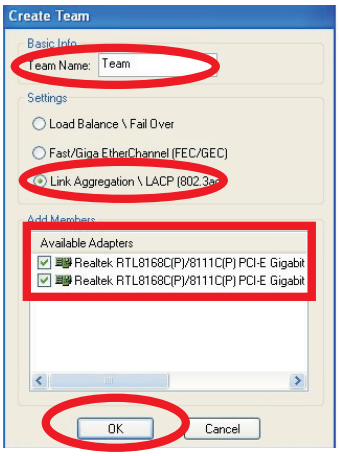
For Windows® XP / XP 64-bit OS:

1. Install Teaming driver from the following path of motherboard Support CD:
   .. \ Drivers \ LAN \ REALTEK \ Teaming
   (This is a special driver for Teaming function only. If you don't want to use Teaming, please install the LAN driver provided by our support CD link.)
   When installing teaming driver, system will show below warming message. Please choose **Continue Anyway** and keep installing driver.
2. After installing driver, please open **Teaming Utility** in Programs.
   (**Start > Programs > Realtek > Teaming Utility**)
3. Click **Teaming** item and then press **Create Team** button.

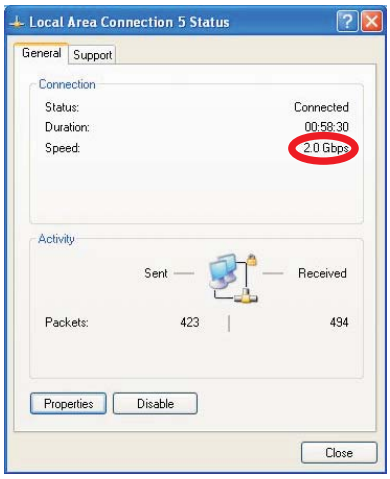

Realtek - Teaming Application
Realtek RTL8168C(P
Realtek RTL8168C(P
General
Teaming
Driver
Teaming
Teaming is an advanced feature for server environment. With teaming, many physical adapters can be combianed to be a team with virtual adapters that have features of load balance and fail over. Click the follow button to create a team.
Create Team

English

4. Key in Team Name and choose **Link Aggregation \ LACP (802.3ad)** for Settings.



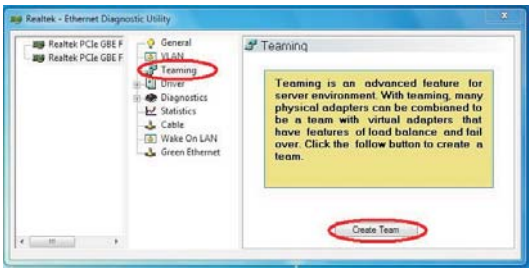
5. Select two available onboard LAN cards and then press **OK** button. (After pressing **OK** button, system will show below warming message. Please choose **Continue Anyway**.)
6. After doing above settings, system will auto create a new Local Area Connection.
7. Reboot your system. Then, you will find the **Speed** column of new Local Area Connection show 2.0Gbps.



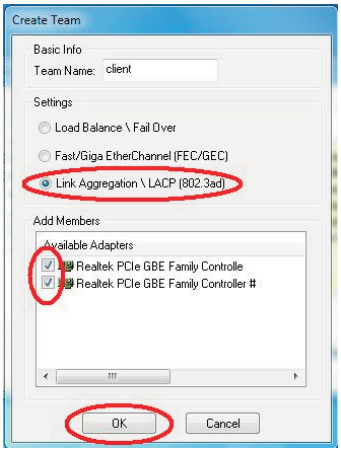
English

For Windows® Vista™ / Vista™ 64-bit / 7 / 7 64-bit OS:

1. Install Teaming driver from the following path of motherboard Support CD:
   .. \ Drivers \ LAN \ REALTEK \ Teaming
   (This is a special driver for Teaming function only. If you don't want to use Teaming, please install the LAN driver provided by our support CD link.)
   When installing teaming driver, system will show below warming message. Please choose **Continue Anyway** and keep installing driver.
2. After installing driver, please open **Teaming Utility** in Programs.
   (**Start > Programs > Realtek > Teaming Utility**)
3. Click **Teaming** item and then press **Create Team** button.

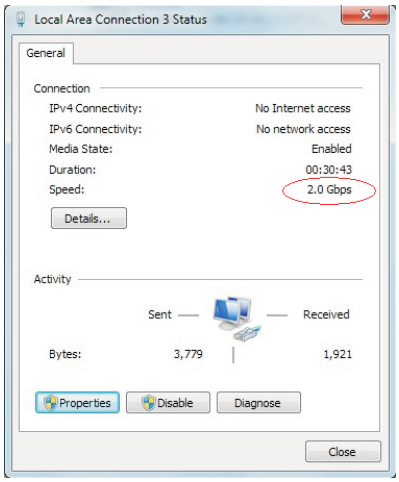

Realtek - Ethernet Diagnostic Utility
Realtek PCIe GBE F
Realtek PCIe GBE F
General
VLAN
Teaming
Driver
Diagnostics
Statistics
Cable
Wake On LAN
Green Ethernet
Teaming
Teaming is an advanced feature for server environment. With teaming, many physical adapters can be combianed to be a team with virtual adapters that have features of load balance and fail over. Click the follow button to create a team.
Create Team

4. Key in Team Name and choose **Link Aggregation \ LACP (802.3ad)** for Settings.



English

5. Select two available onboard LAN cards and then press **OK** button. (After pressing **OK** button, system will show below warming message. Please choose **Continue Anyway**.)
6. After doing above settings, system will auto create a new Local Area Connection.
7. Reboot your system. Then, you will find the **Speed** column of new Local Area Connection show 2.0Gbps.



3. BIOS Information

The Flash Memory on the motherboard stores BIOS Setup Utility. When you start up the computer, please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter BIOS Setup utility; otherwise, POST continues with its test routines. If you wish to enter BIOS Setup after POST, please restart the system by pressing <Ctl> + <Alt> + <Delete>, or pressing the reset button on the system chassis. The BIOS Setup program is designed to be user-friendly. It is a menu-driven program, which allows you to scroll through its various sub-menus and to select among the predetermined choices. For the detailed information about BIOS Setup, please refer to the User Manual (PDF file) contained in the Support CD.

4. Software Support CD information

This motherboard supports various Microsoft® Windows® operating systems: 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit. The Support CD that came with the motherboard contains necessary drivers and useful utilities that will enhance motherboard features. To begin using the Support CD, insert the CD into your CD-ROM drive. It will display the Main Menu automatically if “AUTORUN” is enabled in your computer. If the Main Menu does not appear automatically, locate and double-click on the file “ASSETUP.EXE” from the BIN folder in the Support CD to display the menus.

1. 主板简介

谢谢你采用了华擎 ***H77WS-DL*** 主板，本主板由华擎严格制造，质量可靠，稳定性好，能够获得卓越的性能。本安装指南介绍了安装主板的步骤。更加详细的主板信息可参看驱动光盘的用户手册。

由于主板规格和 BIOS 软件将不断升级，本手册之相关内容变更恕不另行通知。请留意华擎网站上公布的升级版本。你也可以在华擎网站找到最新的显卡和 CPU 支持表。
华擎网址：http://www.asrock.com
如果您需要与此主板有关的技术支持，请参观我们的网站以了解您使用机种的规格信息。
www.asrock.com/support/index.asp

1.1 包装盒内物品

华擎 ***H77WS-DL*** 主板
（ATX 规格：12.0 英寸 X 9.6 英寸，30.5 厘米 X 24.4 厘米）
华擎 ***H77WS-DL*** 快速安装指南
华擎 ***H77WS-DL*** 支持光盘
两条 Serial ATA(SATA) 数据线（选配）
一块 I/O 挡板

ASRock提醒您...
为了在 Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit 系统中取得更好的性能，建议您在BIOS中将Storage Configuration（存储配置）选项设成AHCI模式。关于BIOS设置程序，请参见支持光盘中的“User Manual”以了解相详细信息。

简体中文

1.2 主板规格

架构	- ATX 规格：12.0 英寸 X 9.6 英寸，30.5 厘米 X 24.4 厘米 - 全固态电容设计
处理器	- 支持第三代和二代 Intel® Core™ i7 / i5 / i3 和 Pentium® / Celeron® 处理器 (LGA1155 针脚) - 4 + 2 电源相位设计 - 支持 Intel® Turbo Boost 2.0 技术 - 支持 K- 系列解锁的 CPU - 支持 Hyper-Threading 超线程技术（详见警告 1）
芯片组	- Intel® H77 - 支持 Intel® 快速启动技术和 Intel® 智能连接技术
系统内存	- 支持双通道 DDR3 内存技术（见警告 2） - 配备四个 DDR3 DIMM 插槽 - 支持 DDR3 1600/1333/1066 non-ECC、un-buffered 内存 (Intel® Ivy Bridge CPU 支持 DDR3 1600，Intel® Sandy Bridge CPU 支持 DDR3 1333) - 最高支持 32GB 系统容量（见警告 3） - 支持 Intel® Extreme Memory Profile(XMP)1.3/1.2
扩展插槽	- 1 x PCI Express 3.0 x16 插槽 (PCIE1: x16 模式)（见警告 4） * 使用 Intel® Ivy Bridge CPU 方可支持 PCIE 3.0。若使用 Intel® Sandy Bridge CPU，仅支持 PCIE 2.0。 - 1 x PCI Express 2.0 x16 插槽 (PCIE2: x4 模式) - 2 x PCI 插槽 - 支持 AMD Quad CrossFireX™ 和 CrossFireX™ 技术
板载显卡	* 仅内置 GPU 的处理器可支持 Intel® HD Graphics 内置视觉特性与 VGA 输出。 - 支持 Intel® HD Graphics 内置视觉特性：Intel® Quick Sync Video 2.0、Intel® InTru™ 3D、Intel® Clear Video HD 技术、Intel® Insider™、Intel® HD Graphics 2500/4000 - Intel® Ivy Bridge CPU 支持 Pixel Shader 5.0、DirectX 11 技术。Intel® Sandy Bridge CPU 支持 Pixel Shader 4.1、DirectX 10.1 技术 - 最大共享内存 1760MB（见警告 5） - 支持 D-Sub，最高分辨率达 2048x1536 @ 75Hz
板载 LAN 功能	- PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - 支持网路唤醒 (Wake-On-LAN) - 支持网路线侦测功能 - 支持 Energy Efficient Ethernet 802.3az - 支持双 LAN 整合功能

	– 支持 PXE
Rear Panel I/O（后面板输入 / 输出接口）	I/O 界面 – 1 个 PS/2 鼠标接口 – 1 个 PS/2 键盘接口 – 1 个 VGA 接口 – 4 个可直接使用的 USB 2.0 接口 – 2 个可直接使用的 USB 3.0 接口 – 2 个 RJ-45 局域网接口与 LED 指示灯 (ACT/LINK LED 和 SPEED LED)
SATA3	– 2 x Intel® H77的SATA3 6.0Gb/s连接头，支持RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage 和 Intel Smart Response 技术), NCQ, AHCI 和热插拔功能 – 2 x ASMedia ASM1061 的 SATA3 6.0Gb/s 连接头，支持 NCQ, AHCI 和热插拔功能
USB 3.0	– 2 x 后置 USB 3.0 接口，支持 USB 1.0/2.0/3.0 到 5Gb/s – 1 x 前置 USB 3.0 接针（支持 2 个 USB 3.0 接口），支持 USB 1.0/2.0/3.0 到 5Gb/s
连接头	– 4 x SATA2 3.0Gb/s 连接头，支持 RAID (RAID 0, RAID 1, RAID 5, RAID 10, Intel Rapid Storage 和 Intel Smart Response 技术), NCQ, AHCI 和热插拔功能 – 4 x SATA3 6.0Gb/s 连接头 – 1 x 消费类红外线模块接头 – 1 x 串行接口 – 1 x 电源指示灯连接排针 – 1 x 机箱开启警告功能接头 – 1 x 系统辅助控制面板连接排针 – 1 x TPM 接头 – CPU/ 机箱 / 电源风扇接头 – 24 针 ATX 电源接头 – 8 针 12V 电源接头 – 3 x USB 2.0 接针（可支持 6 个额外的 USB 2.0 接口） – 1 x USB 3.0 接针（可支持 2 个额外的 USB 3.0 接口）
BIOS	– 64Mb AMI UEFI Legal BIOS, 支持 GUI – 支持即插即用 (Plug and Play,PnP) – ACPI 1.1 电源管理 – 支持 jumperfree 免跳线模式 – 支持 SMBIOS 2.3.1 – CPU Core, IGPU, DRAM, 1.8V PLL, VTT, VCCSA 电压多功能调节器
支持光盘	– 驱动程序，工具软件，杀毒软件（测试版本）

独家功能	– ASRock Extreme Tuning Utility (AXTU)（详见警告 6） – 华擎即时开机功能 – 华擎 Instant Flash（见警告 7） – 华擎 APP Charger（见警告 8） – 华擎 SmartView（见警告 9） – 华擎 XFast USB（见警告 10） – 华擎 XFast LAN（见警告 11） – 华擎 XFast RAM（见警告 12） – 华擎 Crashless BIOS（见警告 13） – Hybrid Booster（安心超频技术）: – 华擎 U-COP（见警告 14） – Boot Failure Guard (B.F.G.，启动失败恢复技术） – 组合散热器选项 (C.C.O.)（见警告 15） – 晚安指示灯
硬件监控器	– CPU 温度侦测 – 主板温度侦测 – CPU/ 机箱 / 电源风扇转速计 – CPU/ 机箱静音风扇（允许根据 CPU 温度自动调整机箱风扇速度） – CPU/ 机箱风扇多速控制 – 电压范围: +12V, +5V, +3.3V, 核心电压
操作系统	– Microsoft® Windows® 7/7 64 位元 /Vista™/Vista™ 64 位元 / XP/XP 64 位元适用于此主板（见警告 16）
认证	– FCC, CE, WHQL – 支持 ErP/EuP（需要同时使用支持 ErP/EuP 的电源供应器）（见警告 17）

* 请参阅华擎网站了解详细的产品信息： http://www.asrock.com

警告
请了解超频具有不可避免的风险，这些超频包括调节 BIOS 设置、运用异步超频技术或使用第三方超频工具。超频可能会影响您的系统稳定性，甚至会导致系统组件和设备的损坏。这种风险和代价须由您自己承担，我们对超频可能导致的损坏不承担责任。

警告!

1、 关于“Hyper-Threading Technology”（超线程技术）的设置，请参考 CD 光盘中的“User Manual”第 53 页。

2、 这款主板支援双通道内存技术。在您实现双通道内存技术之前，为能正确安装，请确认您已经阅读了第 15 页的内存模组安装指南。

3、 由于操作系统的限制，在 Windows® 7 / Vista™ / XP 下，供系统使用的实际内存容量可能小于 4GB。对於 Windows® 操作系统搭配 64 位元 CPU 来说，不会存在这样的限制。您可以通过华擎 XFast RAM 来利用 Windows® 无法使用的内存。

4、 只有 PCIE1 插槽支持 Gen 3 速度。若要使 PCI Express 运行于 Gen 3 速度，您必须安装 Ivy Bridge CPU。若您安装了 Sandy Bridge CPU，则 PCI Express 只能运行于 Gen 2 速度。

5、 最大共享内存大小由芯片组厂商定义并且可以更改。请查阅 Intel® 网站了解最新资讯。

6、 ASRock Extreme Tuning Utility (AXTU) 是一个多合一的工具，可在用户友好的界面中微调不同的系统功能，包括硬件监控、风扇控制、超频、OC DNA 和 IES。在 Hardware Monitor（硬件监控）中，显示系统的主要参数。在 Fan Control（风扇控制）中，显示风扇速度和温度，以便您进行调整。在 Overclocking（超频）中，您可以对 CPU 进行超频，以优化系统性能。在 OC DNA 中，您可以将自己的 OC 设置保存为配置文件，并与您的朋友共享。您的朋友可以将您的 OC 配置文件加载他们的系统中，从而得到相同的 OC 设置。在 IES（智能节能）中，电压调节器可以在 CPU 核心空闲时减少输出相位数，以提高效率且不影响运计算性能。关于 ASRock Extreme Tuning Utility (AXTU) 的操作步骤，请访问我们的网站。
华擎网站：http://www.asrock.com

7、 华擎 Instant Flash 是一个内建于 Flash ROM 的 BIOS 更新工具程序。这个方便的 BIOS 更新工具可让您无需进入操作系统（如 MS-DOS 或 Windows®）即可进行 BIOS 的更新。在系统开机自检过程中按下 <F6> 键或在 BIOS 设置菜单中按下 <F2> 键即可进入华擎 Instant Flash 工具程序。启动这一程序後，只需把新的 BIOS 文件保存在 U 盘、软盘或硬盘中，轻松点击鼠标就能完成 BIOS 的更新，而不再需要准备额外的软盘或其他复杂的更新程序。请注意 :U 盘或硬盘必须使用 FAT32/64 文件系统。

8、 若您想要更快速、更自由地为您的苹果设备，如 iPhone/iPad/iPod touch 充电，华擎为您提供了一个绝妙的解决方案－华擎 APP Charger。只需安装 APP Charger 驱动程序，用电脑为 iPhone 充电最多可比以往快 40%。华擎 APP Charger 允许您同时为多部苹果设备快速充电，甚至可以在电脑进入待机 (S1)、挂起至内存 (S3)、休眠 (S4) 或关机 (S5) 模式下持续为设备充电。只需安装了 APP Charger 驱动程序，您立刻就能拥有非凡的充电体验。

9、 SmartView 是 Internet 浏览器的一项新功能，它作为 IE 的智能起始页面，在一个增强的视图中提供您经常访问的网站、您的游览历史记录、您的 Facebook 朋友、以及您的实时新闻来源，可为您提供更具个性化的 Internet 体验。华擎主板专门配备 SmartView 应实用程序，可帮助您随时与朋友保持联系。为使用 SmartView 功能，请确保您操作系统的版本是 Windows® 7 / 7 64 位元 / Vista™ / Vista™ 64 位元，浏览器的版本是 IE8。

华擎网站：http://www.asrock.com/Feature/SmartView/index.asp

10、华擎 XFast USB 可以提升 USB 存储设备性能。性能可能因设备特性不同而存在差异。

11、华擎 XFast LAN 可提供更快的网络访问，包括以下诸多好处。网络应用程序优先级：您可以设置理想的应用程序优先级，并可以添加新程序。游戏更少延迟：将在线游战设置为较高的优先级，可降低游战中的延迟。流量定形：您可以在观看 Youtube 高清视频的同时进行文件下载。实时分析您的数据：通过状态窗口，您可以清楚地看到目前正在传输的是哪个数据流。

12、华擎 XFast RAM 是 ASRock Extreme Tuning Utility (AXTU) 中加入的一项新功能。它能充分利用 Windows® 操作系统 32-bit CPU 无法使用的内存空间。华擎 XFast RAM 可缩短之前访问过的网站的加载时间，从而加快网络冲浪速度。此外，它还能提升 Adobe Photoshop 运行的速度高达五倍之多。华擎 XFast RAM 的另一项优势是它能减少访问 SSD 或 HDD 的频次，从而延长它门的使用寿命。

13、华擎 Crashless BIOS 能让用户安心地更新他们的 BIOS，而不用担心发生故障。如果在 BIOS 更新过程中断电，华擎 Crashless BIOS 会在电源恢复后自动完成 BIOS 更新过程。请注意，BIOS 文件需存放在 USB 盘的根目录中。此功能只支持 USB2.0 端口。

14、当检测到 CPU 过热问题时，系统会自动关机。在您重新启动系统之前，请检查主板上的 CPU 风扇是否正常运转并拔出电源线，然后再将它插回。为了提高散热性，在安装 PC 系统时请在 CPU 和散热器之间涂一层导热胶。

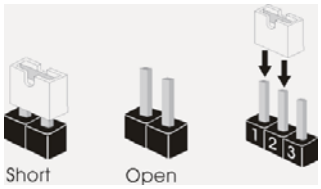
15、组合散热器选项 (C.C.O.) 提供灵活的选项，让您可使用三种不同的 CPU 散热器类型，分别是 LGA775,LGA1155 与 LGA1156。请注意：并非所有的 775 和 1156 CPU 风扇都支持此功能。

16、Microsoft® Windows® XP / XP 64-bit 系统不支持华擎 XFast RAM。Microsoft® Windows® Vista™ / Vista™ 64-bit / XP / XP 64-bit 系统不支持 Intel® 智能连接技术和 Intel® USB 3.0 连接头。

17、EuP，全称 Energy Using Product（能耗产品），是欧盟用来定义完整系统耗电量的规定。根据 EuP 的规定，一个完整系统在关机模式下的交流电总消耗必须在 1.00W 以下。为满足 EuP 标准，您需要同时具备支持 EuP 的主板和支持 EuP 的电源供应器。根据 Intel® 的建议，支持 EuP 的电源供应器必须满足在 100mA 电流消耗时，5Vsb 电源效率高于 50%。有关支持 EuP 的电源供应器选择方面的更多细节，我们建议您咨询电源供应器的制作商。

1.3 跳线设置

插图所示的就是设置跳线的方法。当跳线帽放置在针脚上时，这个跳线就是“短接”。如果针脚上没有放置跳线帽， 这个跳线就是“开路”。插图显示了一个 3 针脚的跳线，当跳线帽放置在针脚 1 和针脚 2 之间时就是“短接”。



接脚	设定
清除 CMOS (CLRCMOS1，3 针脚跳线) (见第 2 页第 33 项)	1_2 默认设置 2_3 清除 CMOS

注意： CLRCMOS1 允许您清除 CMOS 中的数据。如要清除并将系统参数恢复至默认设置，请关闭计算机，然后从电源插座上拔掉电源线。等待 15 秒后，使用跳线帽将 CLRCMOS1 上的插针 2 和插针 3 短接 5 秒。但是，请勿在更新 BIOS 后立即清除 CMOS。如果需要在更新 BIOS 后立即清除 CMOS，必须在执行 CMOS 清除操作之前，先启动然后关闭系统。请注意，只有取出 CMOS 电池，密码、日期、时间、用户默认配置文件、1394 GUID 和 MAC 地址才会被清除。

1.4 板载接头和接口

板载接头和接口不是跳线。切勿将跳线帽放置在这些接头和接口上。将跳线帽放置在接头和接口上将会导致主板的永久性损坏！

Serial ATA2 接口
(SATA2_2：见第 2 页第 20 项)
(SATA2_3：见第 2 页第 19 项)
(SATA2_4：见第 2 页第 18 项)
(SATA2_5：见第 2 页第 17 项)

这里有四组 Serial ATA2 (SATA2) 接口支持Serial (SATA) 数据线作为内部储存设置。目前 SATA2 界面理论上可提供高达 3.0Gb/s 的数据传输速率。

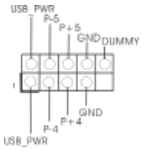
Serial ATA3 接口
(SATA3_0：见第 2 页第 22 项)
(SATA3_1：见第 2 页第 21 项)
(SATA3_A0：见第 2 页第 24 项)
(SATA3_A1：见第 2 页第 23 项)

这里有四组 Serial ATA3 (SATA3) 接口支持Serial (SATA) 数据线作为内部储存设置。目前 SATA3 界面理论上可提供高达 6.0Gb/s 的数据传输速率。

Serial ATA (SATA) 数据线（选配）

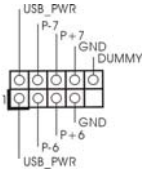
SATA 数据线的任意一端均可连接 SATA/SATA2/SATA3 硬盘或者主板上的 SATA2/SATA3 接口。

USB 2.0 扩展接头
(9 针 USB4_5)
(见第 2 页第 27 项)

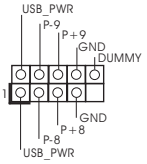


除了位於 I/O 面板的四个默认 USB 2.0 接口之外，这款主板有三组USB 2.0接针。每组USB 2.0 接针可以支持两个 USB 2.0 接口。

(9 针 USB6_7)
(见第 2 页第 26 项)



(9 针 USB8_9)
(见第 2 页第 25 项)

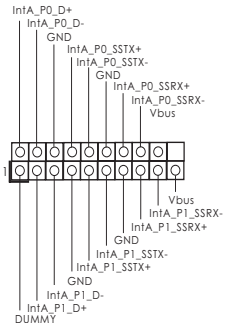


简体中文

USB 3.0 扩展接头

(19 针 USB3_2_3)

(见第 2 页第 8 项)



除了位於 I/O 面板的两个默认 USB 3.0 接口之外，这款主板有一组 USB 3.0 接针。这组 USB 3.0 接针可以支持两个 USB 3.0 接口。

消费类红外线模块接头

(4 针 CIR1)

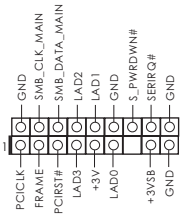
(见第 2 页第 28 项)

此接口可以连接遥控器。

TPM 接头

(17 针 TPMS1)

(见第 2 页第 29 项)

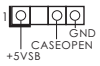


本接头支持可信任平台模组（TPM）系统，可安全的保存密钥、数字证书、密码与数据。TPM 系统还可增强网络的安全性，保护数字身份，且确保平台的完整性。

机箱开启警告功能接头

(3 针 CHASSIS1)

(见第 2 页第 15 项)

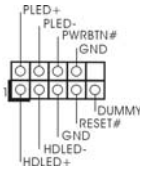


本主板支持机箱开启侦测功能，可侦测机箱盖是否被移动。此功能需机箱具备机箱开启侦测设计。

系统面板接头

(9 针 PANEL1)

(见第 2 页第 14 项)



这个接头提供数个系统前面板功能。

根据下面的针脚说明连接机箱上的电源开关、重启按钮与系统状态指示灯到这个排针。根据之前请注意针脚的正负极。

PWRBTN(电源开关):
连接机箱前面板的电源开关。您可以设置用电源键关闭系统的方式。
RESET(重启开关):
连接机箱前面板的重启开关。当电脑死机且无法正常重新启动时，可按下重启开关重新启动电脑。

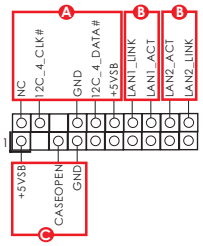
PLED（系统电源指示灯）：
连接机箱前面板的电源状态指示灯。当系统运行时，此指示灯亮起。当系统处于 S1/S3 待机模式时，此指示灯保持闪烁。当系统处于 S4 待机模式或关机（S5）模式时，此指示灯熄灭。
HD LED（硬盘活动指示灯）：
连接机箱前面板的硬盘动作指示灯。当硬盘正在读取或写入数据时，此指示灯亮起。

前面板设计因机箱不同而有差异。前面板模块一般由电源开关、重启开关、电源指示灯、硬盘动作指示灯、喇叭等构成。将您的机箱前面板连接到此排针时，请确认连接线与针脚上的说明相对应。

系统辅助控制面板连接排针

(18 针 AUX_PANEL1)

（见第 2 页第 16 项）



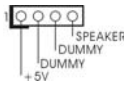
此接口支持前面板的多项功能，包括前面板 SMB、互联网络状态指示灯与机箱开启警告功能排针。

A. 前面板 SMBus 连接排针（6-1 pin FPSMB）
本排针可让您连接 SMBus（系统管理总线）设备。它可用于传输速度较低的系统外围设备与电源管理设备之间的通讯。
B. 互联网状态指示灯（2-pin LAN1_LED、LAN2_LED）
这两个 2-pin 排针可让您使用千兆网络指示灯连接线来连接 LAN 状态指示灯。当指示灯闪烁时，代表网络已正确连接。
C. 机箱开启警告功能排针（4-1 pin CHASSIS）
此排针需具备机箱开启侦测设计的电脑机箱才能使用。此外还需要连接外接侦测设备才能工作，如机箱开启侦测传感器或微型开关。当此功能开启时，如果机箱元件发生移动，传感器会立即侦测到并发送信号到此排针，然后系统将会记录这次机箱开启事件。默认情况下本接针设置为 CASEOPEN 与 GND 针脚，此功能关闭。

机箱喇叭接头

(4 针 SPEAKER1)

（见第 2 页第 12 项）



请将机箱喇叭连接到这个接头。

电源指示灯连接排针

(3 针 PLED1)

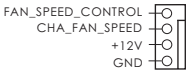
(见第 2 页第 13 项)

请将机箱电源指示灯连接到这一排针，以指示系统电源状态。当系统正在运行时，LED 指示灯亮。在 S1/S3 模式下，LED 指示灯会不停闪烁。在 S4 或 S5 模式（关机）下，LED 指示灯会熄灭。

机箱，电源风扇接头

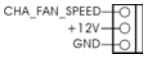
(4 针 CHA_FAN1)

(见第 2 页第 36 项)



(3 针 CHA_FAN2)

(见第 2 页第 9 项)



(3 针 PWR_FAN1)

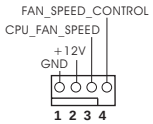
(见第 2 页第 35 项)

请将机箱，电源风扇连接线接到这个接头，并让黑线与接地的针脚相接。

CPU 风扇接头

(4 针 CPU_FAN1)

(见第 2 页第 3 项)



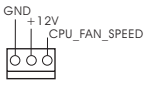
请将 CPU 风扇连接线接到这个接头，让黑线与接地的针脚相接。

虽然此主板支持 4-Pin CPU 风扇 (Quiet Fan，静音风扇)，但是没有调速功能的 3-Pin CPU 风扇仍然可以在此主板上正常运行。如果您打算将 3-Pin CPU 风扇连接到此主板的 CPU 风扇接口，请将它连接到 Pin 1-3。

Pin 1-3 连接
3-Pin 风扇的安装

(3 针 CPU_FAN2)

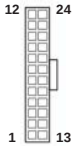
(见第 2 页第 4 项)



ATX 电源接头

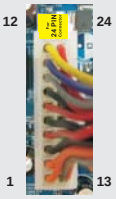
(24 针 ATXPWR1)

(见第 2 页第 7 项)



请将 ATX 电源供应器连接到这个接头。

虽然此主板提供 24-pin ATX 电源接口，但是您仍然可以使用传统的 20-pin ATX 电源。为了使用 20-pin ATX 电源，请顺著 Pin 1 和 Pin 13 插上电源接头。



20-Pin ATX 电源安装说明

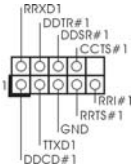
ATX 12V 接头
(8 针 ATX12V1)
(见第 2 页第 1 项)

请将一个 ATX 12V 电源供应器接到这个接头。

虽然此主板提供 8-pin ATX 12V 电源接口，但是您仍然可以使用传统的 4-pin ATX 12V 电源。为了使用 4-pin ATX 12V 电源，请顺著 Pin 1 和 Pin 5 插上电源接头。

4-Pin ATX 12V 电源安装说明

串行接口连接器
(9 针 COM1)
(见第 2 页第 30 项)



这个 COM1 端口支持一个串行接口的外设。

2. BIOS 信息

主板上的 Flash Memory 存储了 BIOS 设置程序。请再启动电脑进行开机自检 (POST) 时按下 <F2> 或 <Del> 键进入 BIOS 设置程序；此外，你也可以让开机自检 (POST) 进行常规检验。如果你需要在开机自检 (POST) 之后进入 BIOS 设置程序，请按下 <Ctrl>+<Alt>+<Delete> 键重新启动电脑，或者按下系统面板上的重启按钮。有关 BIOS 设置的详细信息，请查阅随机支持光盘里的用户手册 (PDF 文件)。

3. 支持光盘信息

本主板支持各种微软视窗操作系统：Microsoft® Windows® 7/7 64 位元 /Vista™/ Vista™ 64 位元 /XP/XP 64 位元。主板随机支持光盘包含各种有助于提高主板效能的必要驱动和实用程序。请将随机支持光盘放入光驱里，如果电脑的“自动运行”功能已启用，屏幕将会自动显示主菜单。如果主菜单不能自动显示，请查找支持光盘内 BIN 文件夹下的“ASSETUP.EXE”，并双击它，即可调出主菜单。

电子信息产品污染控制标示

依据中国发布的「电子信息产品污染控制管理办法」及 SJ/T 11364-2006「电子信息产品污染控制标示要求」，电子信息产品应进行标示，藉以向消费者揭露产品中含有的有毒有害物质或元素不致发生外泄或突变从而对环境造成污染或对人身、财产造成严重损害的期限。依上述规定，您可于本产品之印刷电路板上看见图一之标示。图一中之数字为产品之环保使用期限。由此可知此主板之环保使用期限为 10 年。

图一

有毒有害物质或元素的名称及含量说明

若您欲了解此产品的有毒有害物质或元素的名称及含量说明，请参照以下表格及说明。

部件名称	有害物质或元素					
	铅 (Pb)	镉 (Cd)	汞 (Hg)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及电子组件	X	O	O	O	O	O
外部信号连接头及线材	X	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求，然该部件仍符合欧盟指令 2002/95/EC 的规范。

备注： 此产品所标示之环保使用年限，系指在一般正常使用状况下。

Installing OS on a HDD Larger Than 2TB in AHCI Mode

This motherboard adopts UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow the procedures below to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP2 or above)** or **Windows® 7 64-bit (with SP1 or above)**.
2. Press <F2> or <Delete> at system POST. Set **AHCI Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.
3. Choose the item **"UEFI:xxx"** to boot in UEFI Setup Utility > Boot > Boot Option #1. ("xxx" is the device which contains your Windows® installation files. Normally it is an optical drive.) You can also press <F11> to launch boot menu at system POST and choose the item **"UEFI:xxx"** to boot.
4. Start Windows® installation.

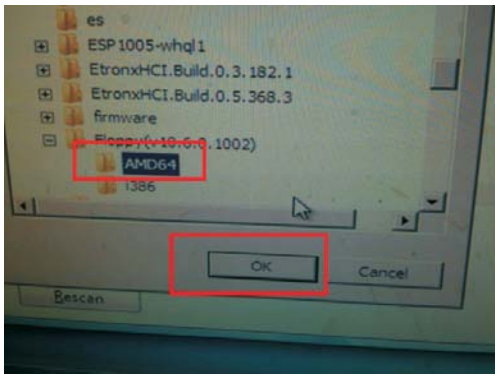
Installing OS on a HDD Larger Than 2TB in RAID Mode

This motherboard adopts UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow the procedures below to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP2 or above)** or **Windows® 7 64-bit (with SP1 or above)**.
2. Copy Intel® RAID drivers into a USB flash disk. You can download the driver from ASRock's website and unzip the file into a USB flash disk **OR** copy the file from ASRock motherboard support CD. (please copy the files under following directory:
   32 bit: ..\i386\Win7_Vista_Intel..
   64-bit: ..\AMD64\Win7-64_Vista64_Intel..
3. Create RAID array for you system. Please refer to "Intel RAID Installation Guide" file for details.
4. Install Windows® Vista™ 64-bit / 7 64-bit:
   A. Insert your Windows® Vista™ 64-bit / 7 64-bit installation disc to the optical drive.
   B. Press <F11> to launch boot menu at system POST and choose the item "UEFI:xxx" to boot.
   C. Start Windows® Installation. When you see "Where do you want to install Windows?" page, please click "Load Driver".

   D. Plug the USB flash disk into your USB port; select "Browse" to find the RAID driver. Then choose the directory (xx\AMD64\) you have copied in the first step.

English



E. Please keep the USB flash disk installed until the system first reboot.

F. Continue to install OS by following the Windows® instructions.

5. Follow Windows® Installation Guide to install OS.

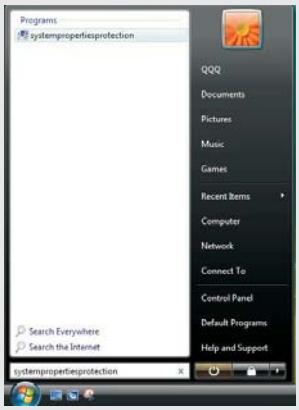
If you install Windows® 7 64-bit / Vista™ 64-bit in a large hard disk (ex. Disk volume > 2TB), it may take more time to boot into Windows® or install driver/ utilities. If you encounter this problem, you will need to following instructions to fix this problem.

Windows® Vista™ 64-bit:

Microsoft® does not provide hotfix for this problem. The steps listed below are Microsoft®'s suggested solution:

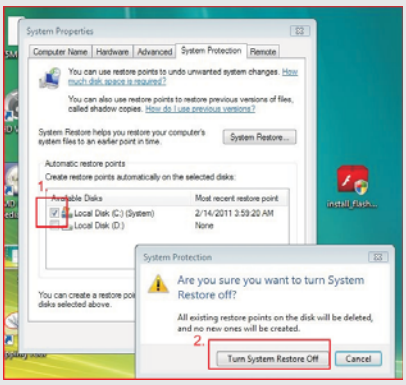
A. Disable System Restore.

a. Type “systempropertiesprotection” in the Start Menu. Then press "Enter".



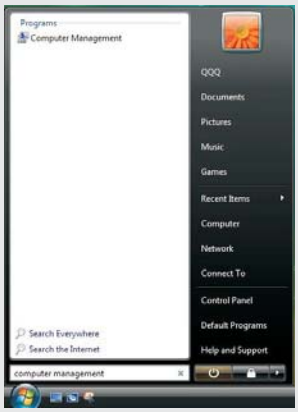
b. De-select Local Disks for System Restore. Then Click “Turn System Restore Off” to confirm. Then Press “Ok”.

English

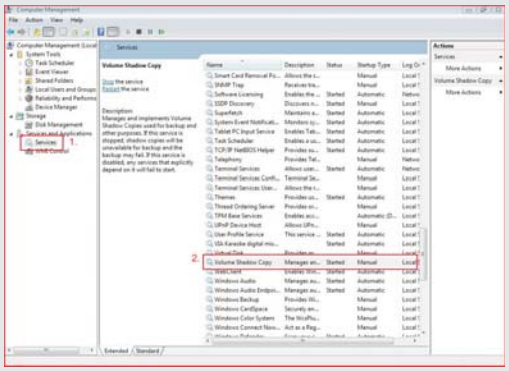


B. Disable “Volume Shadow Copy” service.

a. Type “computer management” in the Start Menu, then press “Enter”.

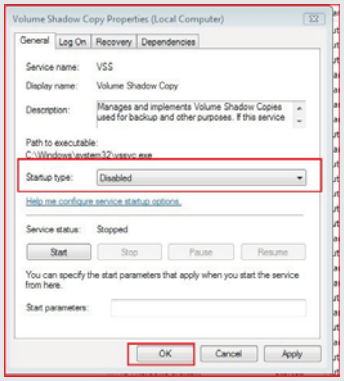


b. Go to “Services and Applications>Services”; Then double click “Volume Shadow Copy”.



English

c. Set “Startup type” to “Disable” then Click “OK”.



C. Reboot your system.

D. After reboot, please start to install motherboard drivers and utilities.

Windows® 7 64-bit:

A. Please request the hotfix KB2505454 through this link:
http://support.microsoft.com/kb/2505454/

B. After installing Windows® 7 64-bit, install the hotfix kb2505454.
(This may take a long time; >30 mins.)

C. Reboot your system. (It may take about 5 minutes to reboot.)

D. Windows® will install this hotfix then reboot by itself.

E. Please start to install motherboard drivers and utilities.

6. Finish.

English